

## Nanotech-based Potential Coronavirus Treatment, Focus of Tiziana Life Sciences' New Patent



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Tiziana Life Sciences revealed it has filed a patent application on the combination of nanoparticle-Actinomycin D (NP-ACT D) with anti-interleukin-6 receptor monoclonal antibody (anti-IL-6R) for the treatment of coronavirus (COVID-19).

[Tiziana Life Sciences plc](#), a biotechnology company focused on innovative therapeutics for inflammatory, autoimmune and infectious diseases, announced that it has filed a provisional patent application on the combination of nanoparticle-Actinomycin D (NP-ACT D) with anti-interleukin-6 receptor monoclonal antibody (anti-IL-6R) as a potential therapy for management of COVID-19 disease.

The underlying invention concepts are based on the hypothesis that a combination of an antiviral drug controlling proliferation of COVID-19, with an anti-inflammatory agent (e.g., anti-IL-6R) suppressing a possible 'Cytokine Storm' may provide immediate relief to severe cases of COVID-19 patients.

Actinomycin D (ACT D), an antibiotic drug approved initially for infectious diseases in the [United States](#) in 1964, is on the World Health Organization's List of Essential Medicines as the most effective medicine needed in a health system (1). However, severe toxicities associated with the intravenous administration of ACT D limits its widespread therapeutic utility.

### [Nanotechnology in Battle Against Coronavirus ...](#)

The NP-ACT D formulation, effectively controlling slow and sustained release, may overcome the severe toxicities of ACT D. Side-by-side animal studies have compared NP-ACT D with free

ACT D and demonstrated that the intravenous treatment with NP-ACT D was well-tolerated with minimal apparent toxicities in animal models. Importantly, results from another animal study comparing free ACT D side-by-side with an equivalent dose of NP-ACT D, showed 0% mortality in rats dosed with NP-ACT D as compared to > 90% mortality with free ACT D (2). Nonetheless, safety and tolerability of NP-ACT D needs to be evaluated in healthy volunteers prior to any clinical studies.

Patients infected with COVID-19 are known to develop an uncontrolled immune response (“cytokine storm”), which results in excessive production of pro-inflammatory cytokines such as IL-6 and TNF- $\alpha$  both of which are regarded as key drivers of chronic inflammation and are believed to be associated with severe lung damage commonly observed in patients with COVID-19 infections and acute respiratory distress syndrome (ARDS).

Therefore, Tiziana believes it is possible to potentially combine TZLS-501 (anti-IL6R) with NP-Act D to inhibit viral proliferation and to suppress inflammation in lungs to halt progression of COVID-19-mediated lung damage and death.

Read the [original article](#) on Tiziana Life Sciences.